

1 3. (Amended) [Space transformer] Interposer, according to claim [1] ~~43~~<sup>1</sup>, wherein:  
2 the first plurality of resilient contact structures are composite interconnection  
3 elements.

1 4. (Amended) [Space transformer] Interposer, according to claim [1] ~~43~~<sup>1</sup>, wherein:  
2 the first plurality of resilient contact structures are fabricated on a sacrificial  
3 substrate prior to mounting the first plurality of resilient contact structures directly to the first  
4 plurality of terminals.

1 5. (Amended) [Space transformer] Interposer, according to claim [1] ~~43~~<sup>1</sup>, further  
2 comprising:  
3 a second plurality of resilient contact structures mounted directly to the second  
4 plurality of terminals.

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1 6. (Amended) [Space transformer] Interposer, according to claim [1] ~~5~~<sup>1</sup>, wherein:  
2 the second plurality of resilient contact structures are composite interconnection  
3 elements.

1 7. (Amended) [Space transformer] Interposer, according to claim [1] ~~5~~<sup>1</sup>, wherein:  
2 the second plurality of resilient contact structures are fabricated on a sacrificial  
3 substrate prior to mounting the second plurality of resilient contact structures directly to the second  
4 plurality of terminals.

1 8. (Amended) Probe Card Assembly, comprising:  
2 a probe card having a [top] first surface, a [bottom] second surface and a plurality  
3 of contact terminals on the [top] first surface thereof;

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Sub 4 an interposer having a [top] first surface, a [bottom] second surface, a [first]  
5 second plurality of resilient contact structures extending from the [bottom] second surface thereof  
6 and a [second] first plurality of contact structures extending from the [top] first surface thereof; and

7 a space transformer having a [top] first surface, a [bottom] second surface, a  
8 plurality of contact pads disposed on the [bottom] second surface thereof, and a third plurality of  
9 resilient contact structures extending from the [top] first surface thereof;

10 wherein:

11 the [first] second plurality of resilient contact structures effect a pressure  
12 connection with the contact terminals of the probe card; and

13 the [second] first plurality of resilient contact structures effect a pressure connection  
14 with the contact pads of the space transformer.

1 9. (Amended) Probe Card Assembly, according to claim 8, wherein:

2 the third plurality of resilient contact structures are mounted directly to terminals on  
3 the [top] first surface of the space transformer.

1 13. (Amended) Probe Card Assembly, according to claim 8, wherein:

2 [each one] one or more of the first plurality of resilient contact structures [are at  
3 least two composite interconnection elements] are a composite structure, wherein the resilient  
4 contact structure includes a resilient material of sufficient dimension to act resiliently, the resilient  
5 material connected to a precursor material, the precursor material having a springable shape but not  
6 having material properties and dimensions to act resiliently in the absence of the connected resilient  
7 material.

1 14. (Amended) Probe Card Assembly, according to claim 8, wherein:

2 [each one] one or more of the second plurality of resilient contact structures [are at  
3 least two composite interconnection elements] are a composite structure, wherein the resilient

4 contact structure includes a resilient material of sufficient dimension to act resiliently, the resilient  
5 material connected to a precursor material, the precursor material having a springable shape but not  
6 having material properties and dimensions to act resiliently in the absence of the connected resilient  
7 material.

1 15. (Amended) Probe Card Assembly, according to claim 8, further comprising:

2 a front mounting plate made of a rigid material, having a [top] first surface and a  
3 [bottom] second surface, and disposed with its [bottom] second surface against the [top] first  
4 surface of the probe card;

5 means for affixing the front mounting plate to the [top] first surface of the probe  
6 card; and

7 means for urging the space transformer [against] towards the [top] first surface of  
8 the probe card.

1 20. (Amended) Probe Card Assembly, according to claim 15, wherein the means for  
2 affixing the front mounting plate comprises:

3 a rear mounting plate made of a rigid material, having a [top] first surface and a  
4 [bottom] second surface, and disposed with its [top] first surface against the [bottom] second  
5 surface of the probe card; and

6 a plurality of screws extending between the front mounting plate and the rear  
7 mounting plate, through the probe card.

1 22. (Amended) Probe Card Assembly, according to 8, further comprising:

2 means for adjusting the [planarity] orientation of the space transformer relative to the probe  
3 card without changing the orientation of the probe card.

1 23. (Amended) Probe Card Assembly, according to claim 22, wherein the means for  
2 adjusting the planarity of the space transformer comprises:

3 a plurality of differential screws, each including an outer differential screw element  
4 and an inner differential screw element, acting upon the [bottom] second surface of the space  
5 transformer.

1 24. (Amended) Probe Card Assembly, according to claim 23, further comprising:  
2 a [plurality of] pivot sphere[s] disposed on an end[s] of a first of the inner  
3 differential screw element[s].

1 26. (Amended) Probe Card Assembly, according to claim 22, wherein the means  
2 for adjusting the planarity of the space transformer comprises:

3 [a plurality of] an actuator[s], responsive to a computer, acting upon the [bottom  
4 surface of the] space transformer.

1 27. (Amended) Probe Card Assembly, according to claim 8, wherein:  
2 the contact pads are disposed at a first pitch on the [bottom] second surface of the  
3 space transformer;

4 the third plurality of resilient contact structures are disposed at a second pitch on the  
5 [top] first surface of the space transformer; and

6 the first pitch is greater than the second pitch.

1 28. (Amended) Probe Card Assembly, according to claim 8, wherein:  
2 the first plurality of resilient contact structures are disposed at a first pitch on the  
3 [bottom] first surface of the interposer;  
4 the second plurality of resilient contact structures are disposed at a second pitch on  
5 the [top] second surface of the interposer; and  
6 the first pitch is substantially the same as the second pitch.

1 29. (Amended) Probe Card Assembly, according to claim 8, wherein:  
2 the contact pads are disposed at a [first] first pitch on the [bottom] second surface  
3 of the space transformer;  
4 the third plurality of resilient contact structures are disposed at a second pitch on the  
5 [top] first surface of the space transformer;  
6 the first plurality of resilient contact structures are disposed at the first pitch on the  
7 [bottom] first surface of the interposer;  
8 the second plurality of resilient contact structures are disposed at the first pitch on  
9 the [top] second surface of the interposer; and  
10 the first pitch is greater than the second pitch.

1 30. (Amended) Probe Card kit, comprising:  
2 a space transformer having a [top] first surface, a [bottom] second surface, a  
3 plurality of contact pads disposed on the [bottom] second surface thereof, and a [first] plurality of  
4 [resilient] contact structures [extending from] connected to the [top] first surface thereof, said  
5 space transformer adapted in use for [tips] contact regions of the first plurality of [resilient] contact  
6 structures making pressure contacts with a corresponding plurality of contact areas on a  
7 semiconductor wafer; and  
8 an interposer having a [top] first surface, a [bottom] second surface, a [second]  
9 first plurality of resilient contact structures extending from the [top] first surface thereof [ ], said

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10 interposer adapted in use for [tips] contact regions of the [second] first plurality of resilient contact  
11 structures making pressure connections with the plurality of contact pads on the [bottom] second  
12 surface of the space transformer, the interposer having a [third] second plurality of contact  
13 structures extending from the [bottom] second surface thereof, said interposer adapted in use for  
14 [tips] contact regions of the [third] second plurality of resilient contact structures making pressure  
15 connections with a plurality of terminals on a probe card.

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31. (Amended) Probe Card Kit, according to claim 30, wherein:  
the contact pads are disposed at a first pitch on the [bottom] second surface of the  
space transformer;  
the [first] plurality of [resilient] contact structures are disposed at a second pitch on  
the [top] first surface of the space transformer; and  
the first pitch is greater than the second pitch.

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32. (Amended) Probe Card Kit, according to claim 30, wherein:  
the [third] second plurality of resilient contact structures are disposed at a [first]  
first pitch on the [bottom] first surface of the interposer;  
the [second] first plurality of resilient contact structures are disposed at a second  
pitch on the [top] second surface of the interposer; and  
the first pitch is substantially the same as the second pitch.

33. (Amended) Probe Card Assembly, according to claim 30, wherein:  
the contact pads are disposed at a first pitch on the [bottom] second surface of the  
space transformer;  
the [first] plurality of [resilient] contact structures are disposed at a second pitch on  
the [top] first surface of the space transformer;

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the [third] second plurality of resilient contact structures are disposed at the first pitch on the [bottom] first surface of the interposer;

the [second] first plurality of resilient contact structures are disposed at the first pitch on the [top] second surface of the interposer; and

the first pitch is greater than the second pitch.

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35. (Amended) [Resilient contact structure comprising:] Probe Card Assembly,  
according to claim 8, wherein the resilient contact structure comprises:

3 a composite interconnection element having an end; and

4 a pre-fabricated tip structure joined to the end of the composite interconnection element.

Please add the following new claims:

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--43. [A space transformer] An interposer comprising:

3 a substrate having first and second opposed sides with a first set of terminals on the first side and a second set of terminals on the second side;

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4 a first set of resilient contact structures, each having a portion connected to a respective one of the terminals of the first set of terminals, a contact region distant from the substrate, and an elongate section extending from the portion to the contact region, the elongate section resiliently bending upon depression of the contact region towards the substrate, wherein the contact region of two adjacent resilient contact structures are spaced differently than the terminals of the adjacent resilient contact structures and wherein respective ones of the second set of terminals are coupled to corresponding ones of the first set of terminals; and

11 a second set of resilient contact structures, each having a portion attached to a respective one of the terminals of the second set of terminals, a contact region distant from the

13 substrate, and an elongate section extending from the portion to the contact region, the elongate  
14 section resiliently bending upon depression of the contact region towards the substrate.--

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1 --44. Probe Card Assembly, according to claim 8, wherein:  
2 the third plurality of resilient contact structures are connected to terminals on the  
3 first surface of the space transformer.--

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1 --45. Probe Card Assembly, comprising:  
2 a probe card having a first surface, a second surface and a plurality of contact  
3 terminals on the first surface thereof;  
4 a space transformer having a first surface, a second surface, a plurality of contact  
5 pads disposed on the second surface thereof, and a first plurality of resilient freestanding contact  
6 structures mounted adjacent to and extending from the first surface thereof;  
7 wherein the plurality of contact pads are connected to the plurality of contact  
8 terminals of the probe card.--

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1 --46. Probe Card Assembly, according to claim 45, wherein:  
2 the first plurality of resilient contact structures are mounted directly to terminals on  
3 the first surface of the space transformer.--

1 --47. Probe Card Assembly, according to claim 45, wherein:  
2 the first plurality of resilient contact structures are connected to terminals on the first  
3 surface of the space transformer.--

1 --48. Probe Card Assembly, according to claim 45, wherein:  
2 the first plurality of resilient contact structures are composite interconnection  
3 elements.--



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1 --49. Probe Card Assembly, according to 45, further comprising:  
2 means for adjusting the orientation of the space transformer relative to the probe  
3 card without changing the orientation of the probe card.--

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2 --50. Probe Card Assembly, according to claim 49, wherein the means for adjusting the  
3 planarity of the space transformer comprises:  
4 a plurality of differential screws, each including an outer differential screw element  
5 and an inner differential screw element, acting upon the second surface of the space transformer.--

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1 --51. Probe Card Assembly, according to claim 50, wherein the means for adjusting the  
2 planarity of the space transformer comprises:  
3 an actuator, responsive to a computer, acting upon the space transformer.--

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2 --52. Probe Card Assembly, according to claim 45, wherein:  
3 the contact pads are disposed at a first pitch on the second surface of the space  
4 transformer,  
5 the first plurality of resilient contact structures [are] each having a contact region,  
6 the contact region disposed at a second pitch [on the first surface of the space transformer]; and  
7 the first pitch is greater than the second pitch wherein the first pitch is a shortest  
8 distance between any two adjacent contact pads and the second pitch is a shortest distance between  
any two adjacent contact structures. —

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2 --53. Probe Card Assembly, comprising:  
3 a probe card having a first surface, a second surface and a plurality of contact  
4 terminals on the first surface thereof;

4 a space transformer having a first surface, a second surface, a plurality of contact  
5 pads disposed on the second surface thereof, and a first plurality of contact structures mounted  
6 adjacent to and extending from the first surface thereof;

7 wherein the plurality of contact pads are connected to the plurality of contact  
8 terminals of the probe card.--

1 --54. Probe Card Assembly, according to claim 53, wherein:

2 the first plurality of contact structures are mounted directly to terminals on the first  
3 surface of the space transformer.--

1 --55. Probe Card Assembly, according to claim 53, wherein:

2 the first plurality of contact structures are connected to terminals on the first surface  
3 of the space transformer.--

1 --56. Probe Card Assembly, according to claim 53, wherein:

2 the first plurality of contact structures are composite interconnection elements.--

1 ~~48~~ ~~57~~. Probe Card Assembly, according to ~~53~~, further comprising:

2 means for adjusting the orientation of the space transformer relative to the probe  
3 card without changing the orientation of the probe card.--

1 --58. Probe Card Assembly, according to claim 57, wherein the means for adjusting the  
2 planarity of the space transformer comprises:

3 a plurality of differential screws, each including an outer differential screw element  
4 and an inner differential screw element, acting upon the second surface of the space transformer.--